



MS APPEAL BRIEF - PATENTS  
PATENT  
1422-0371P

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IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of Before the Board of Appeals  
Hideichi NITTA et al. Appeal No.:  
Appl. No.: 09/254,474 Group: 1751  
Filed: March 5, 1999 Examiner: L. M. DOUYON  
Conf.: 7077  
For: DETERGENT PARTICLES, PROCESS FOR  
PREPARING THE SAME, AND DETERGENT  
COMPOSITION HAVING HIGH BULK DENSITY

APPEAL BRIEF TRANSMITTAL FORM

**MS APPEAL BRIEF - PATENTS**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

May 16, 2005  
(Monday)

Sir:

Transmitted herewith is an Appeal Brief on behalf of the Appellants in connection with the above-identified application.

The enclosed document is being transmitted via the Certificate of Mailing provisions of 37 C.F.R. § 1.8.

A Notice of Appeal was filed on March 15, 2005.

Applicant claims small entity status in accordance with 37 C.F.R. § 1.27

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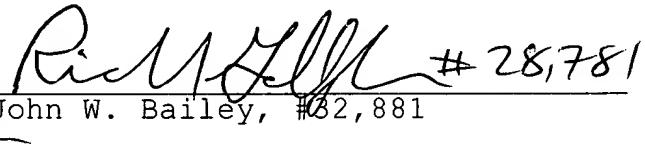
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Respectfully submitted,

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**1422-0371P**

Attachment(s)



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# B R I E F      O N      A P P E A L



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SAME, AND DETERGENT COMPOSITION HAVING HIGH BULK  
DENSITY

**TABLE OF CONTENTS**

|  |      |
|--|------|
| i. Real party in interest.....             | 1    |
| ii. Related appeals and interferences..... | 2    |
| iii. Status of claims.....                 | 2    |
| iv. Status of amendments.....              | 2    |
| v. Summary of claimed subject matter.....  | 2    |
| vi. Grounds of rejection.....              | 4    |
| vii. Argument.....                         | 5    |
| BARLETTA ET AL. ....                       | 5    |
| TADSEN ET AL. ....                         | 6    |
| SUMMARY OF ARGUMENTS .....                 | 9    |
| viii. Claims Appendix .....                | 13   |
| ix. Evidence Appendix .....                | NONE |
| x. Related proceeding Appendix.....        | NONE |



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## **BRIEF ON APPEAL**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

May 16, 2005  
(Monday)

Sir:

This is an appeal from the Final Rejection of claims 5-8, 13, 16, 17, and 20-24.

(i) Real party in interest. The real party in interest in this appeal is KAO CORPORATION, the Assignee of the subject patent application.

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(ii) Related appeals and interferences. There are no related appeals or interferences.

(iii) Status of claims. Claims 5-8, 13, 16, 17, and 20-24 are rejected. Claims 1-4, 9-12, 14, 15, 18, and 19 have been cancelled.

(iv) Status of amendments. No amendments were filed herein subsequent to the close of prosecution.

(v) Summary of claimed subject matter. The present invention enables the production of detergent granules and high-bulk density detergent compositions that comprise neutralized salts made with inorganic acid in relatively larger amounts at near the surfaces of the granules than at the inner portion of the granules, thus providing granules that have low tackiness and small particle sizes. Specification, page 10, line 13 - page 11, line 2.

The embodiment of this invention in independent claim 16 is a method for producing detergent granules which includes at least two steps. Specification, page 11, lines 15-16. In the first step, one prepares a liquid acid precursor of a non-soap, anionic surfactant by a  $\text{SO}_3$  gas sulfonation method, wherein the amount of sulfuric acid preexisting in the liquid acid precursor of the non-soap, anionic

surfactant is 0.09 mole or less per mole of the liquid acid precursor. Specification, page 11, line 19 - page 15, line 19. In the second step, one dry-neutralizes that liquid acid precursor with a water-soluble, solid, alkali inorganic substance, wherein the dry-neutralizing step is carried out adding 0.1 to 1.0 mole of a sulfuric acid per mole of said liquid acid precursor of a non-soap, anionic surfactant to the starting material components, including the liquid acid precursor of a non-soap, anionic surfactant. Specification, page 15, line 22 - page 27, line 19. In accordance with the present invention, the resulting detergent granules contain the non-soap, anionic surfactant in an amount of 28% by weight or more and less than 50% by weight, and have a molar ratio of sodium sulfate:(non-soap, anionic surfactant) of from 0.1 to 1.0. Specification, page 33, lines 17-22.

The embodiment of this invention in independent claim 17 is a method for producing detergent granules which includes at least two steps. Specification, page 11, lines 15-16. In the first step, one prepares a liquid acid precursor of a non-soap, anionic surfactant by a  $\text{SO}_3$  gas sulfonation method, wherein the amount of sulfuric acid preexisting in the liquid acid precursor of the non-soap, anionic surfactant is 0.09 mole or less per mole of the liquid acid precursor. Specification, page 11, line 19 - page 15, line 19. In the second step, one dry-neutralizes that liquid acid precursor with

a water-soluble, solid, alkali inorganic substance, wherein the dry-neutralizing step is carried out adding 0.3 to 1.0 mole of a sulfuric acid per mole of said liquid acid precursor of a non-soap, anionic surfactant to the starting material components, including the liquid acid precursor of a non-soap, anionic surfactant. Specification, page 5, lines 15-20. In accordance with the present invention, the resulting detergent granules contain the non-soap, anionic surfactant in an amount of 10% by weight or more and less than 50% by weight, and have a molar ratio of sodium sulfate:(non-soap, anionic surfactant) of from 0.3 to 1.0. Specification, page 44, lines 5-12.

(vi) Grounds of rejection. Claims 5-8, 13, 16, 17, and 20-24 stand rejected under 35 USC § 103(a) as being unpatentable over Barletta et al. (US 4,919,847). Claims 5, 6, 8, 13, 16, 17, and 20-24 stand rejected under 35 USC § 103(a) as being unpatentable over Tadsen et al. (US 5,527,489). Claims 5, 6, 8, 13, 16, 17, and 20-24 stand rejected under 35 USC § 103(a) as being unpatentable over Otrhalek et al. (US 3,425,948).

(vii) Argument.

*BARLETTA ET AL.*

The reaction product of the Barletta reference is a liquid/paste detergent solution, which can be absorbed by carrier particles such as powdered bentonite. In order to provide such a reaction product, Barletta provides a *wet-neutralization* process for converting a detergent salt solution to a granular product. In the *wet-neutralization* process, an acid precursor for a detergent is neutralized to give a salt solution, and thereafter the derived salt solution is absorbed on carrier particles such as powdered bentonite. This process is very distinct and different from a *dry-neutralization* process as recited in the present claims.

Further, in Barletta, neutralization and granulation are not carried out in a simultaneous manner as is done in *dry-neutralization* process like that instantly claimed. As a result, problems with respect to the agglomeration of granules and with the tackiness thereof occur when using the process and method taught by Barletta. Such problems are not encountered when practicing the instant invention.

Additionally, in the instant invention, *dry-neutralization* is carried out using specific ratios of reactants and ingredients,

which ratios of reactants and ingredients are neither taught nor suggested by Barletta. For example, in the instant claims, there is recited: **(A)** the presence of 0.1 to 1.0 mole (claim 16), or 0.3 to 1.0 mole (claim 17), or 0.3 to 0.8 mole (claims 21 and 23), or 0.35 to 0.7 mole (claims 22 and 24) of sulfuric acid per mole of the liquid acid precursor of a non-soap, anionic surfactant; **(B)** that the resulting detergent granules contain the non-soap, anionic surfactant in an amount of 28% by weight or more and less than 50% by weight (claim 16) or in an amount of 10% by weight or more and less than 28% by weight (claim 17); **and (C)** that the resulting detergent granules have a molar ratio of (inorganic salt undetectable by x-ray diffraction method)/(non-soap, anionic surfactant) of from 0.1 to 1.0 (claim 16) or 0.3 to 1.0 (claim 17).

As such it is submitted that those of ordinary skill in the art upon considering the whole of Barletta's disclosure, would understand that the same does not provide for a *dry-neutralization* as recited in the present claims using specified molar ratios of sulfuric acid per mol of the liquid acid precursor of a non-soap, anionic surfactant, or for a product produced thereby.

*TADSEN ET AL.*

Tadsen discloses a process for making a high-density granular detergent composition by forming a particulate composition

comprised of a pH-sensitive detergent surfactant. The process entails mixing and shearing the particulate composition to partially fluidize the composition, and dispersing into the fluidized particulate composition an alkylbenzene sulfonic acid containing 85% to 98% sulfonic acid, with the dispersion being done in a manner to achieve atomization of alkylbenzene sulfonic acid into fine droplets, thereby neutralizing the alkylbenzene sulfonic acid.

The Tadsen reference recites broad ranges of contents of components without providing any guidance to the significance of the ranges. The prior art must suggest the desirability of making a modification in order for an Examiner to properly make a *prima facie* case of obviousness. *In re Brower*, 77 F.3d 422, 425-426, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995). Moreover, a proper *prima facie* case of obviousness must include some motivation or suggestion to modify or combine references such that one of ordinary skill in the art has a reasonable expectation of success of making the present process.

To prevent the use of hindsight based on the invention to defeat patentability of the invention, ... the examiner [is required] to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner

claimed. *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998).

Accordingly, because Tadsen fails to disclose or suggest essential elements as set forth in the claims and provides no motivation to arrive at the instant invention as claimed, it follows that a *prima facie* case of obviousness has not been properly made and cannot be sustained.

OTRHALEK ET AL.

The Examiner has acknowledged that Otrhalek "fails to specifically disclose the molar ratio of sulfuric acid to alkylbenzene sulfonic acid as those recited [in the present claims] and the bulk density of the resulting composition." A further distinguishing and characteristic feature of the instantly claimed invention is that (1) sulfuric acid is added to the starting material components in a specific proportion and that (2) the amount of sulfuric acid pre-existing in the liquid acid precursor is 0.09 mole or less per mole of said liquid acid precursor. This is reflected in Example 1 on page 51, lines 6-9 of the application, which states that the liquid acid precursor (LAS) contains 0.05 mole of sulfuric acid per mole of LAS as a result of the LAS manufacturing process.

Maintaining such a low level of inorganic acid (sulfuric acid) in the liquid acid precursor results in an advantageous property. This is reflected in disclosure at page 13, lines 16-25 of the application, wherein it is explained that by maintaining the amount of the inorganic acid pre-existing in the liquid acid precursor of the non-soap, anionic surfactant at a level of 0.09 mol or less allows one to accomplish an appropriate color for resulting detergent granules (and thereby also compositions containing the granules), with respect to the outer appearance of a desirable detergent product.

It is manifest that Otrhalek does not teach, disclose, or motivate one of ordinary skill in the art to utilize in any way a liquid acid precursor (LAS) containing such a low amount of inorganic acid, or teach, disclose or otherwise render obvious that by utilizing such a liquid acid precursor (LAS) there can be advantageously and desirably obtained the accomplishment of appropriate color for resulting detergent granules, thereby contributing to the outer appearance of a desired detergent product. Accordingly, it is clear that the instant invention as claimed is completely non-obvious over the Otrhalek reference.

SUMMARY OF ARGUMENTS

Applicants wish to emphasize the following points. In the present invention, sulfuric acid is added during dry-neutralization to an acid precursor of an anionic surfactant that already contains sulfuric acid - if at all - in an amount lower than the very low maximum value recited in the claims. The Examiner does not contend that this feature of the present invention is anticipated by the prior art. However, the Examiner bases her rejections upon the fact that anionic surfactants in the Examples of the references contain some sulfuric acid impurities, and compositionally these amounts seem to overlap with the present invention, such that the Examiner alleges that similar flowability results would be expected.

However, it must be kept in mind that the sulfuric acid in the reference is contained as an impurity which arises during the preparation of the anionic surfactant by a method that was conventional at the time the references were generated. (The latest disclosure in question, Tadsen, was filed originally in October of 1990.) This method - the oleum method - is no longer utilized very much if at all, because for some time now the purification technique for the raw material anionic surfactant is more advanced.

In contrast to any of the prior art upon which the Examiner relies, the present invention positively adds sulfuric acid to an acid precursor of an anionic surfactant having a high concentration - the SO<sub>3</sub> gas method - thereby providing an anionic surfactant that has remarkable improved flowability.

In other words, the present invention - in which sulfuric acid is recognized as an additive - is based upon a technical idea that is totally different from the technical idea of the references - in which sulfuric acid is recognized as an impurity. Therefore, even if the method used in the cited references were still used currently, one of ordinary skill in the art would not easily arrive at the intentional (positive) addition of sulfuric acid to an acid precursor of an anionic surfactant having a high concentration, as taught in the present invention. Therefore, even if the concentration of sulfuric acid seems to overlap between the present invention and the references, Applicants do not agree that the anionic surfactants in question can be considered to be the same, as asserted by the Examiner.

It is clear that neither Barletta nor Tadsen nor Otrhalek teaches or suggests dry-neutralizing a liquid acid precursor with a water-soluble, solid, alkali inorganic substance, wherein the dry-neutralizing step is carried out with **adding** a significant amount

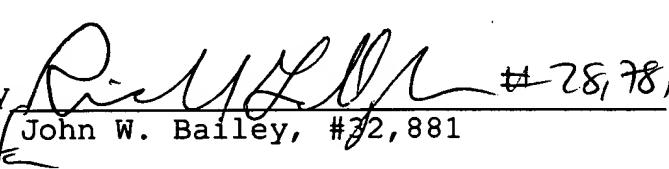
of sulfuric acid to the liquid acid precursor of a non-soap, anionic surfactant. None of the rejections of record is sustainable.

Should there be any questions concerning the present application, the Examiner or the Board is respectfully requested to contact Richard Gallagher (Reg. No. 28,781) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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1422-0371P

(viii) Claims Appendix:

5. The method according to claim 16 or 17, further comprising the step of adding a free-flowing aid after the dry-neutralizing step, to surface modify the detergent granules.

6. The method according to claim 16 or 17, further comprising the step of adding a liquid component after the dry-neutralizing step.

7. The method according to claim 6, further comprising the step of adding a free-flowing aid after the step of adding a liquid component, to surface-modify the detergent granules.

8. The method according to claim 16 or 17, wherein said liquid acid precursor of a non-soap, anionic surfactant is a linear alkylbenzenesulfonic acid obtained by a  $\text{SO}_3$  gas sulfonation method.

13. A high-bulk density detergent composition having a bulk density of 500 g/L or more, comprising detergent granules prepared by the method of claim 16 or 17.

16. A method for producing detergent granules, comprising the step of dry-neutralizing a liquid acid precursor of a non-soap, anionic surfactant prepared by a  $\text{SO}_3$  gas sulfonation method, with a water-soluble, solid, alkali inorganic substance, wherein a dry-neutralizing step is carried out in the presence of 0.1 to 1.0 mole of a sulfuric acid per mole of said liquid acid precursor of a non-soap, anionic surfactant;

wherein the amount of sulfuric acid preexisting in the liquid acid precursor of a non-soap, anionic surfactant is 0.09 mole or less per mole of said liquid acid precursor;

wherein the sulfuric acid is added to the starting material components, including the liquid acid precursor of a non-soap, anionic surfactant; and

wherein the resulting detergent granules contain the non-soap, anionic surfactant in an amount of 28% by weight or more and less than 50% by weight, and have a molar ratio of (inorganic salt undetectable by x-ray diffraction method)/(non-soap, anionic surfactant) of from 0.1 to 1.0, and the inorganic salt undetectable by x-ray diffraction method is sodium sulfate.

17. A method for producing detergent granules, comprising the step of dry-neutralizing a liquid acid precursor of a non-soap, anionic surfactant prepared by a  $\text{SO}_3$  gas sulfonation method, with a

water-soluble, solid, alkali inorganic substance, wherein a dry-neutralizing step is carried out in the presence of 0.3 to 1.0 mole of a sulfuric acid per mole of said liquid acid precursor of a non-soap, anionic surfactant;

wherein the amount of sulfuric acid preexisting in the liquid acid precursor of a non-soap, anionic surfactant is 0.09 mole or less per mole of said liquid acid precursor;

wherein the sulfuric acid is added to the starting material components, including the liquid acid precursor of a non-soap, anionic surfactant; and

wherein the resulting detergent granules contain the non-soap, anionic surfactant in an amount of 10% by weight or more and less than 28% by weight, and have a molar ratio of (inorganic salt undetectable by x-ray diffraction method)/(non-soap, anionic surfactant) of from 0.3 to 1.0, and the inorganic salt undetectable by x-ray diffraction method is sodium sulfate.

20. A detergent granule prepared by the method of claim 16 or 17.

21. The method according to claim 16, wherein the dry-neutralizing step is carried out in the presence of 0.3 to 0.8 mole

of said sulfuric acid per mole of said liquid acid precursor of a non-soap, anionic surfactant.

22. The method according to claim 16, wherein the dry-neutralizing step is carried out in the presence of 0.35 to 0.7 mole of said sulfuric acid per mole of said liquid acid precursor of a non-soap, anionic surfactant.

23. The method according to claim 17, wherein the dry-neutralizing step is carried out in the presence of 0.3 to 0.8 mole of said sulfuric acid per mole of said liquid acid precursor of a non-soap, anionic surfactant.

24. The method according to claim 17, wherein the dry-neutralizing step is carried out in the presence of 0.35 to 0.7 mole of said sulfuric acid per mole of said liquid acid precursor of a non-soap, anionic surfactant.

(ix) Evidence Appendix: None.

(x) Related proceeding Appendix: None.